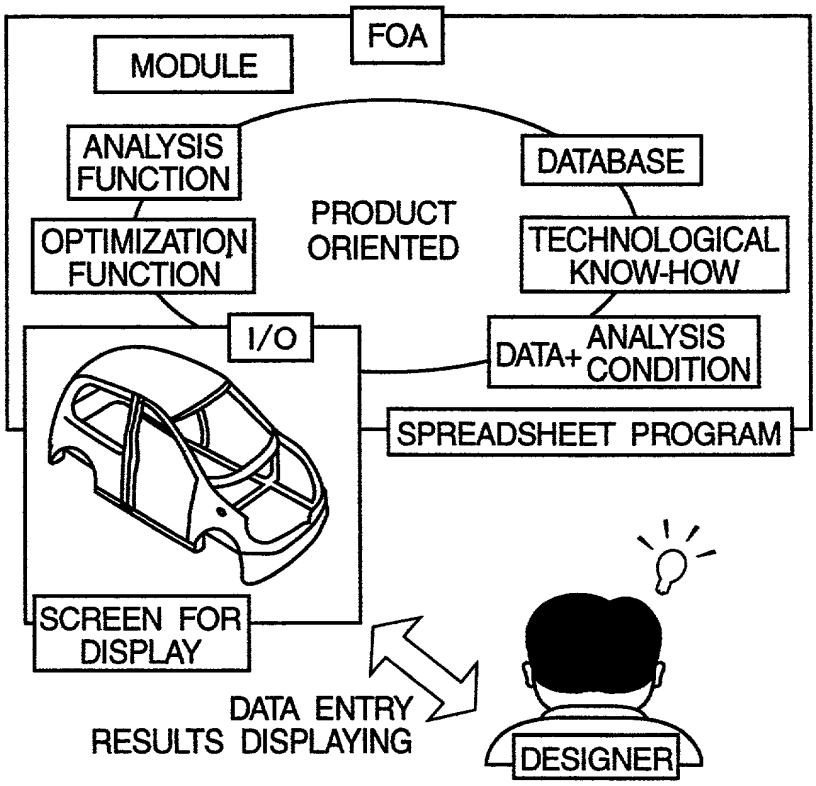

FOA
MODULE
ANALYSIS FUNCTION
DATABASE
PRODUCT ORIENTED
OPTIMIZATION FUNCTION
TECHNOLOGICAL KNOW-HOW
I/O
DATA+ ANALYSIS CONDITION
SPREADSHEET PROGRAM
SCREEN FOR DISPLAY
DATA ENTRY
RESULTS DISPLAYING
DESIGNER

FIG.1

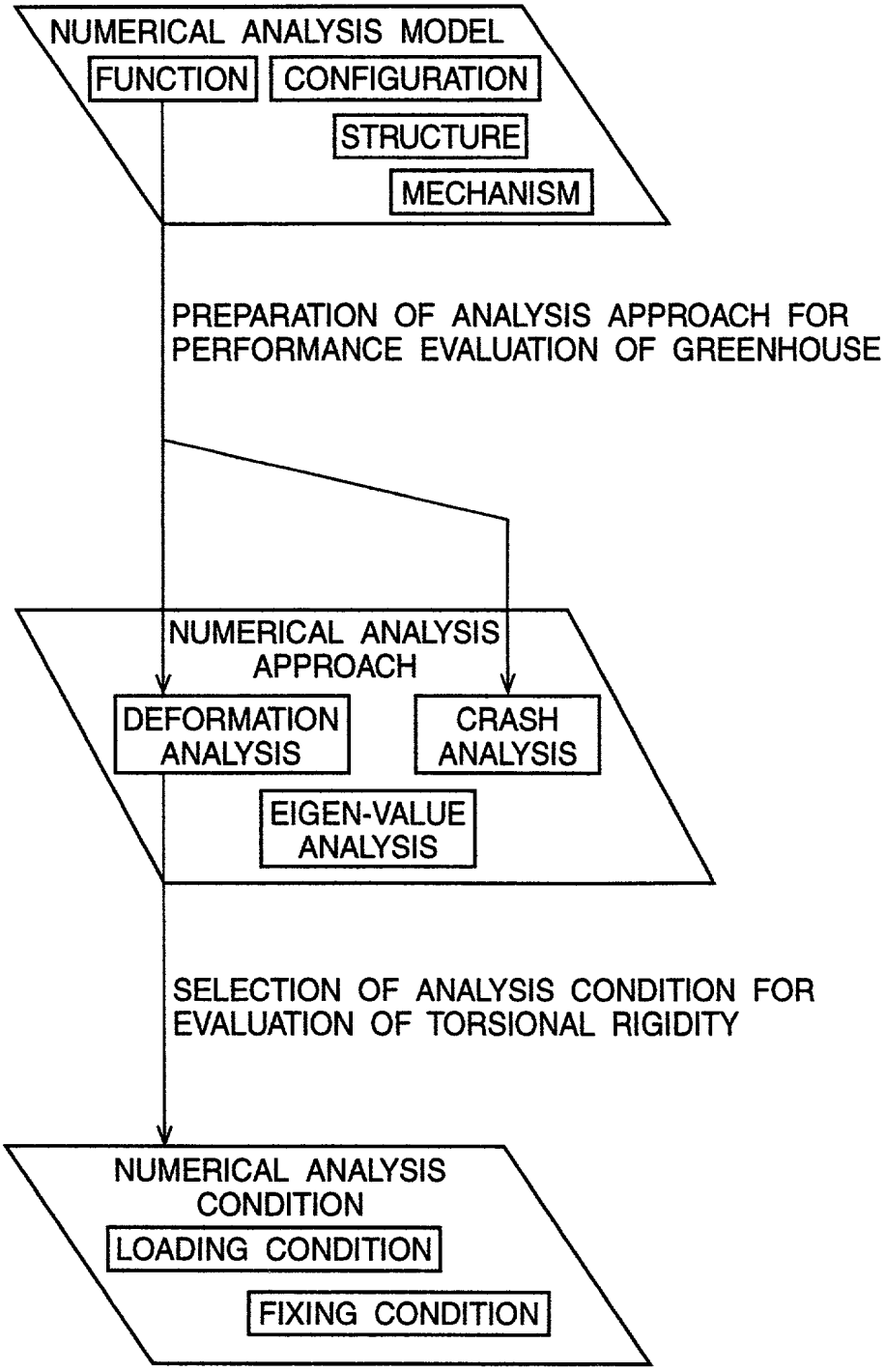

NUMERICAL ANALYSIS MODEL
FUNCTION
CONFIGURATION
STRUCTURE
MECHANISM
PREPARATION OF ANALYSIS APPROACH FOR PERFORMANCE EVALUATION OF GREENHOUSE
NUMERICAL ANALYSIS APPROACH
DEFORMATION ANALYSIS
CRASH ANALYSIS
EIGEN-VALUE ANALYSIS
SELECTION OF ANALYSIS CONDITION FOR EVALUATION OF TORSIONAL RIGIDITY
NUMERICAL ANALYSIS CONDITION
LOADING CONDITION
FIXING CONDITION

FIG.2

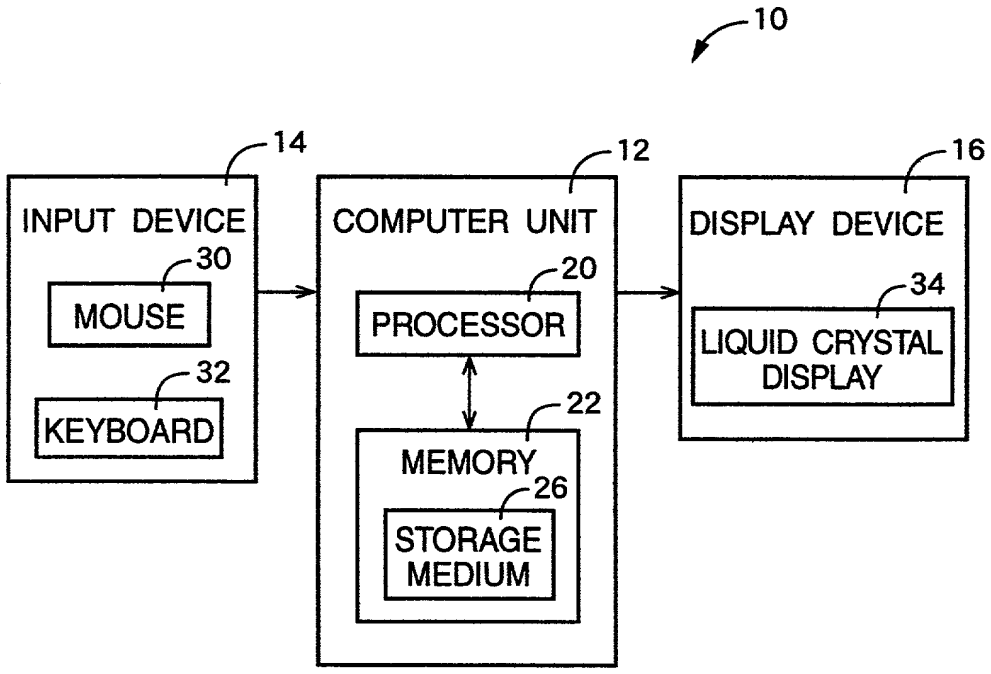

10
14
INPUT DEVICE
30
MOUSE
32
KEYBOARD
12
COMPUTER UNIT
20
PROCESSOR
22
MEMORY
26
STORAGE MEDIUM
16
DISPLAY DEVICE
34
LIQUID CRYSTAL DISPLAY

FIG.3

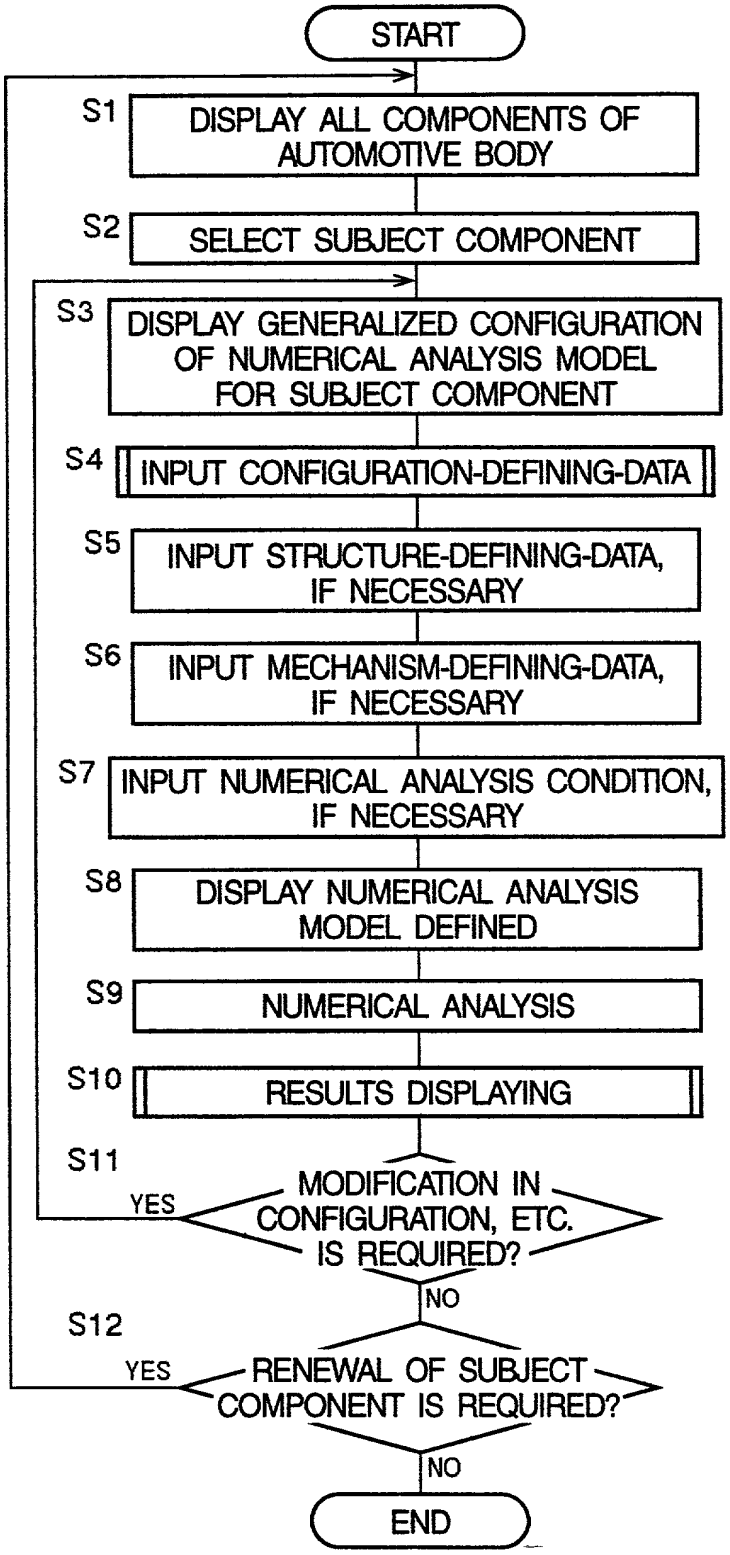

START
S1
DISPLAY ALL COMPONENTS OF AUTOMOTIVE BODY
S2
SELECT SUBJECT COMPONENT
S3
DISPLAY GENERALIZED CONFIGURATION OF NUMERICAL ANALYSIS MODEL FOR SUBJECT COMPONENT
S4
INPUT CONFIGURATION-DEFINING-DATA
S5
INPUT STRUCTURE-DEFINING-DATA, IF NECESSARY
S6
INPUT MECHANISM-DEFINING-DATA, IF NECESSARY
S7
INPUT NUMERICAL ANALYSIS CONDITION, IF NECESSARY
S8
DISPLAY NUMERICAL ANALYSIS MODEL DEFINED
S9
NUMERICAL ANALYSIS
S10
RESULTS DISPLAYING
S11
MODIFICATION IN CONFIGURATION, ETC. IS REQUIRED?
YES
NO
S12
RENEWAL OF SUBJECT COMPONENT IS REQUIRED?
YES
NO
END

FIG.4

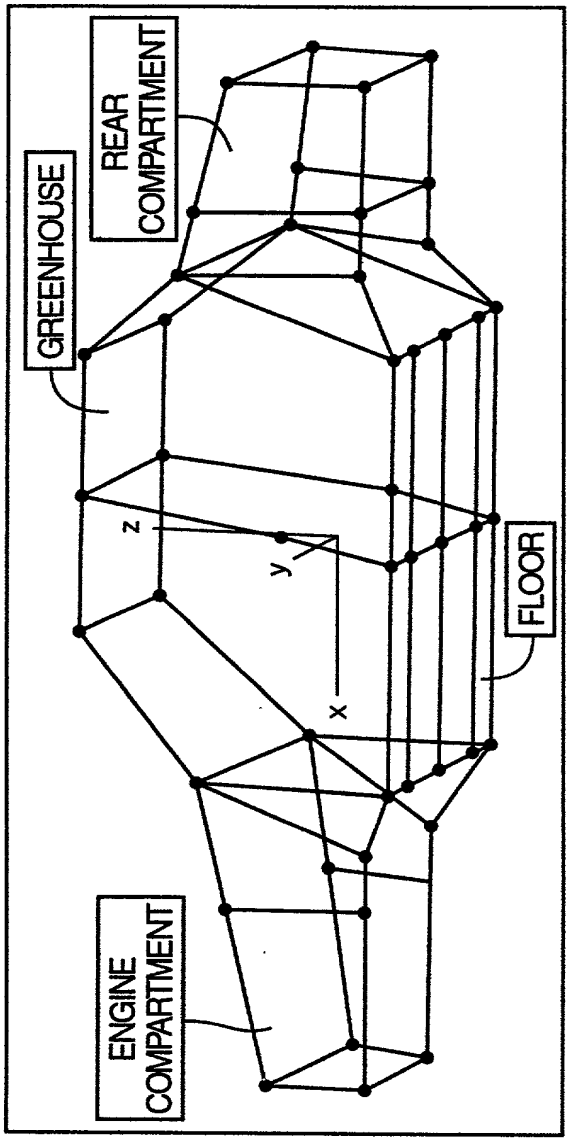

GREENHOUSE
REAR COMPARTMENT
FLOOR
ENGINE COMPARTMENT
z
y
x

FIG.5

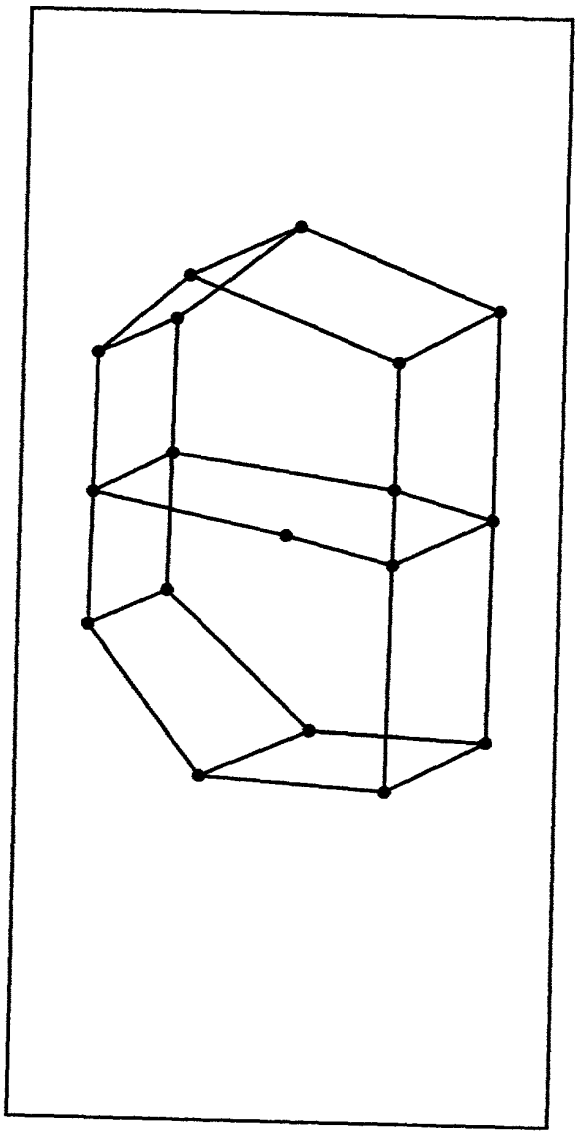


FIG.6

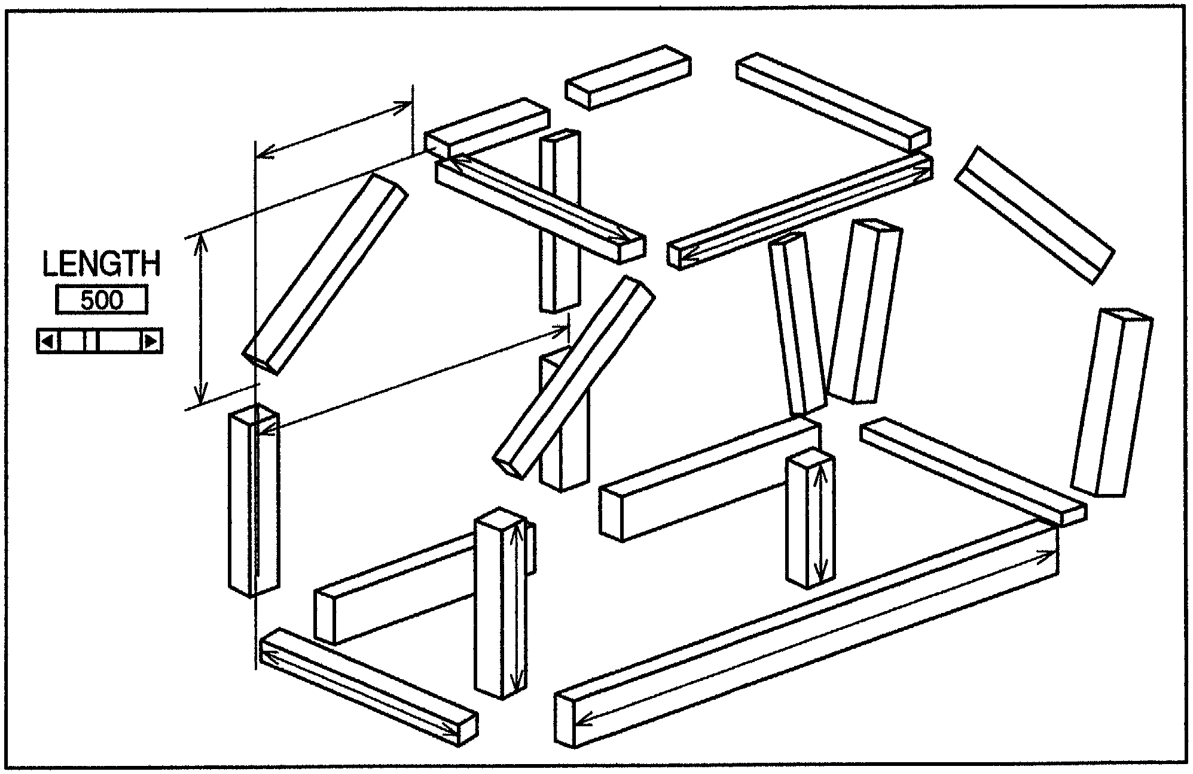


FIG.7

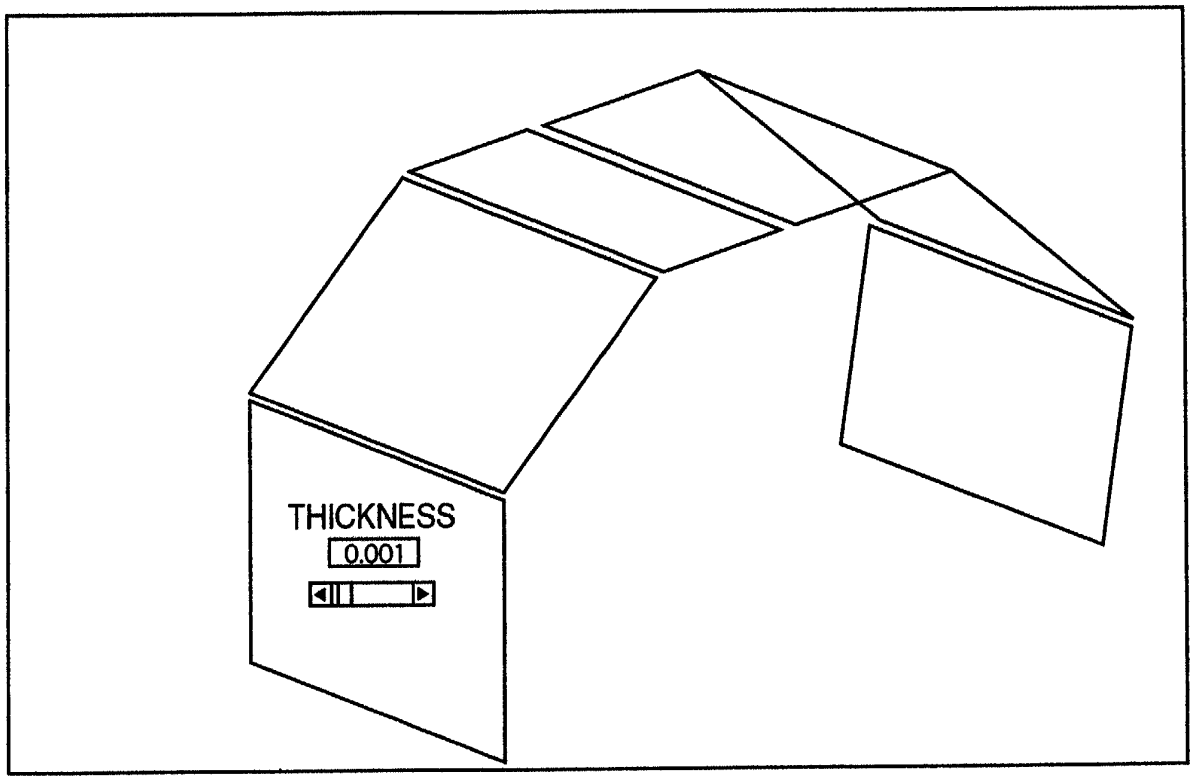


FIG.8

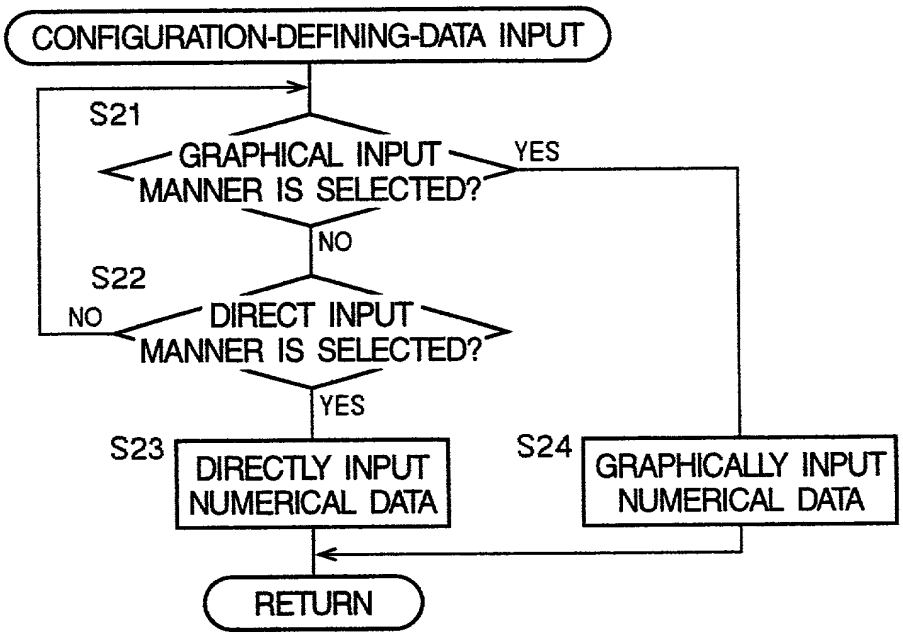
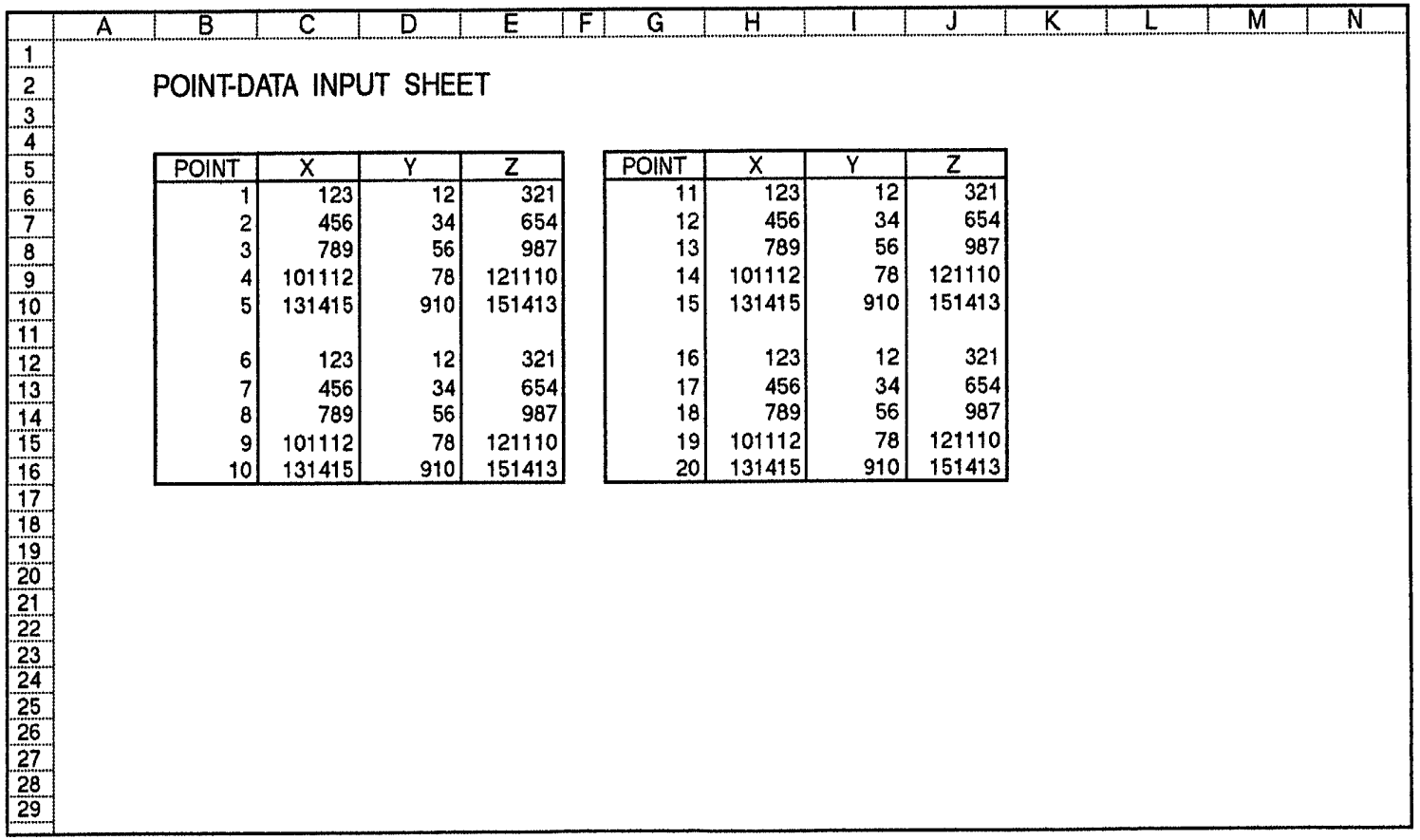

CONFIGURATION-DEFINING-DATA INPUT
S21
GRAPHICAL INPUT MANNER IS SELECTED?
YES
NO
S22
NO
DIRECT INPUT MANNER IS SELECTED?
YES
S23
DIRECTLY INPUT NUMERICAL DATA
S24
GRAPHICALLY INPUT NUMERICAL DATA
RETURN

FIG.9



POINT-DATA INPUT SHEET

POINT	X	Y	Z
1	123	12	321
2	456	34	654
3	789	56	987
4	101112	78	121110
5	131415	910	151413
6	123	12	321
7	456	34	654
8	789	56	987
9	101112	78	121110
10	131415	910	151413

POINT	X	Y	Z
11	123	12	321
12	456	34	654
13	789	56	987
14	101112	78	121110
15	131415	910	151413
16	123	12	321
17	456	34	654
18	789	56	987
19	101112	78	121110
20	131415	910	151413

FIG.10

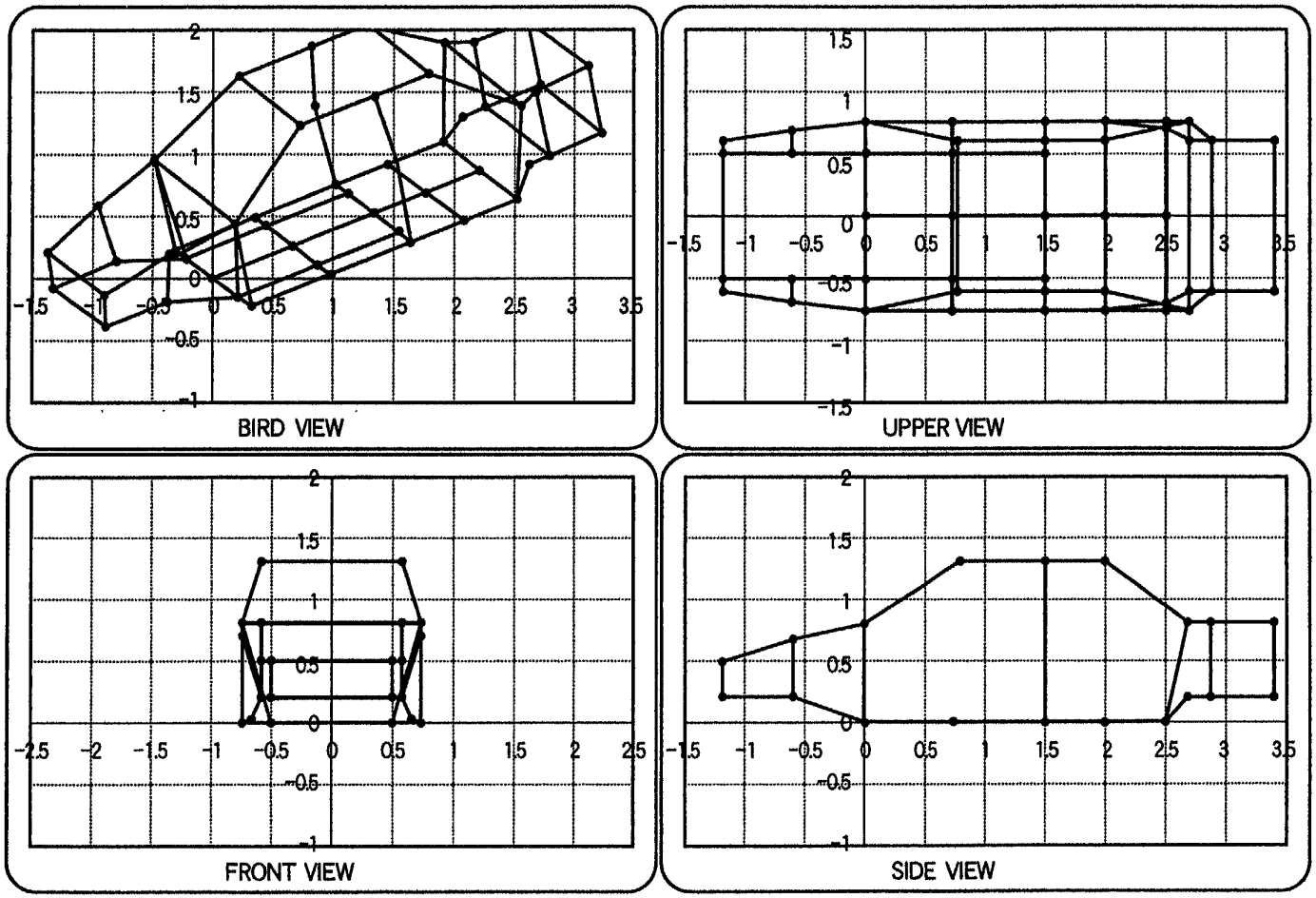


FIG.11

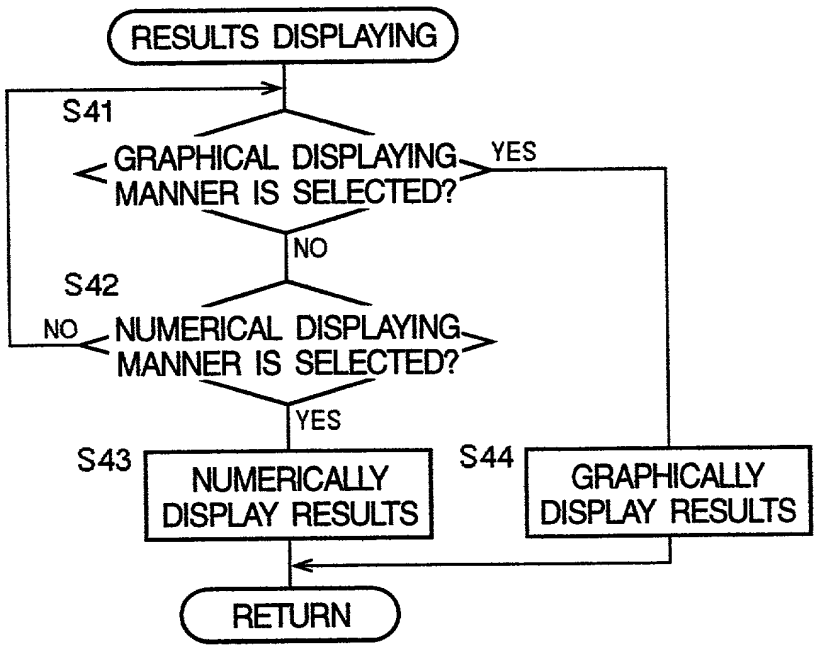

RESULTS DISPLAYING
S41
GRAPHICAL DISPLAYING MANNER IS SELECTED?
YES
NO
S42
NO
NUMERICAL DISPLAYING MANNER IS SELECTED?
YES
S43
NUMERICALLY DISPLAY RESULTS
S44
GRAPHICALLY DISPLAY RESULTS
RETURN

FIG.12

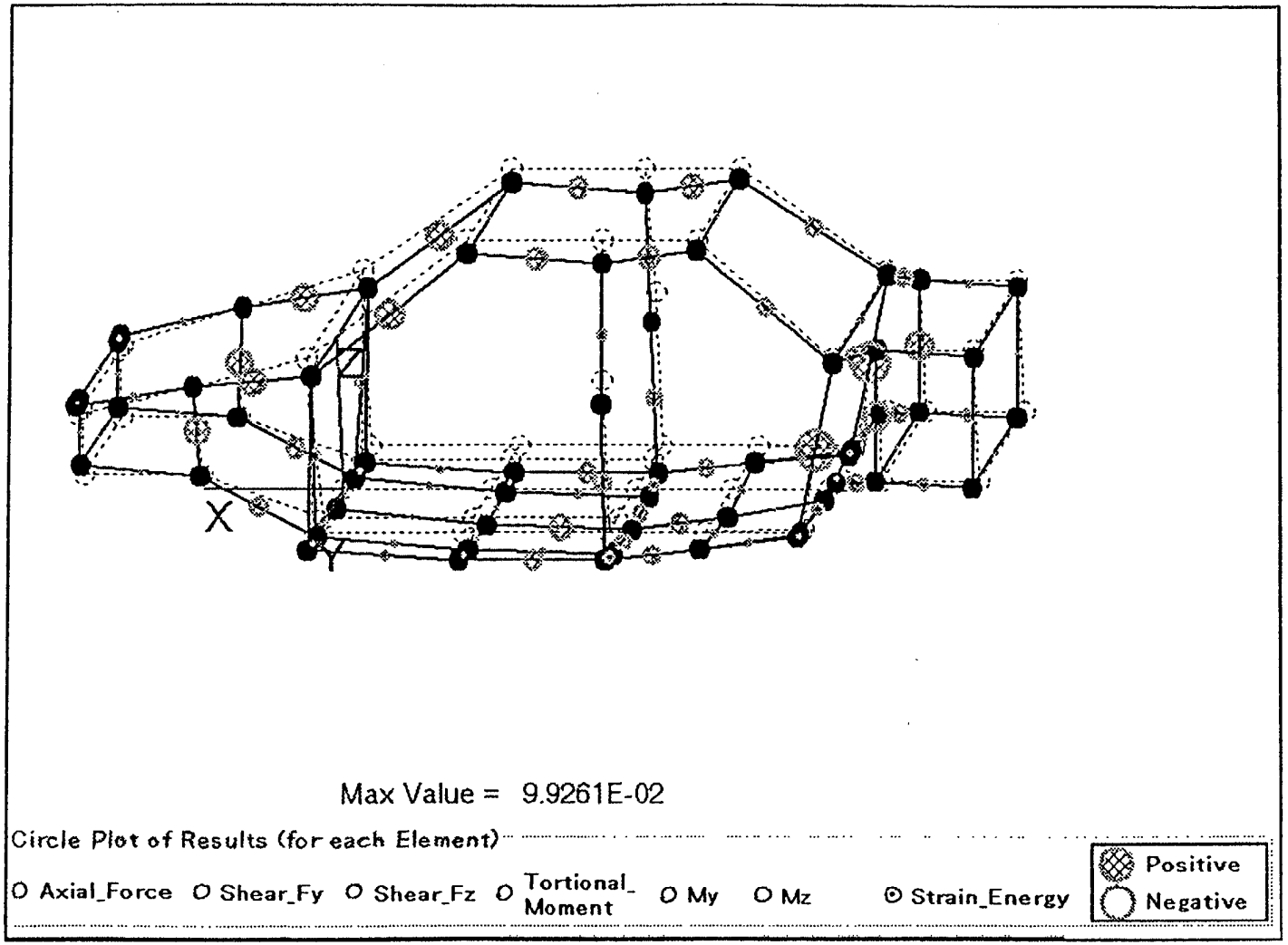


FIG. 13

ANALYSIS RESULTS SHEET

POINT	X	Y	Z
1	123	12	321
2	456	34	654
3	789	56	987
4	101112	78	121110
5	131415	910	151413
6	123	12	321
7	456	34	654
8	789	56	987
9	101112	78	121110
10	131415	910	151413

POINT	X	Y	Z
11	123	12	321
12	456	34	654
13	789	56	987
14	101112	78	121110
15	131415	910	151413
16	123	12	321
17	456	34	654
18	789	56	987
19	101112	78	121110
20	131415	910	151413

FIG.14

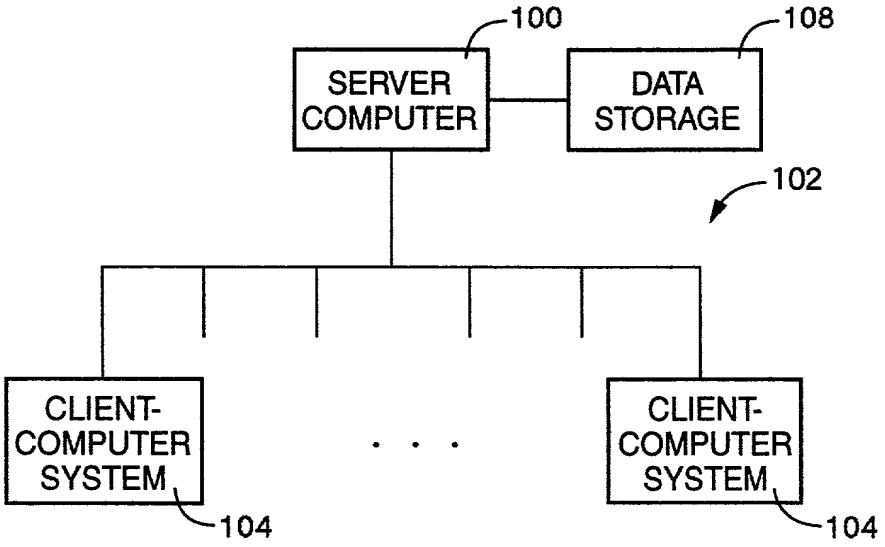

100
108
SERVER COMPUTER
DATA STORAGE
102
CLIENT-COMPUTER SYSTEM
104
CLIENT-COMPUTER SYSTEM
104

FIG.15

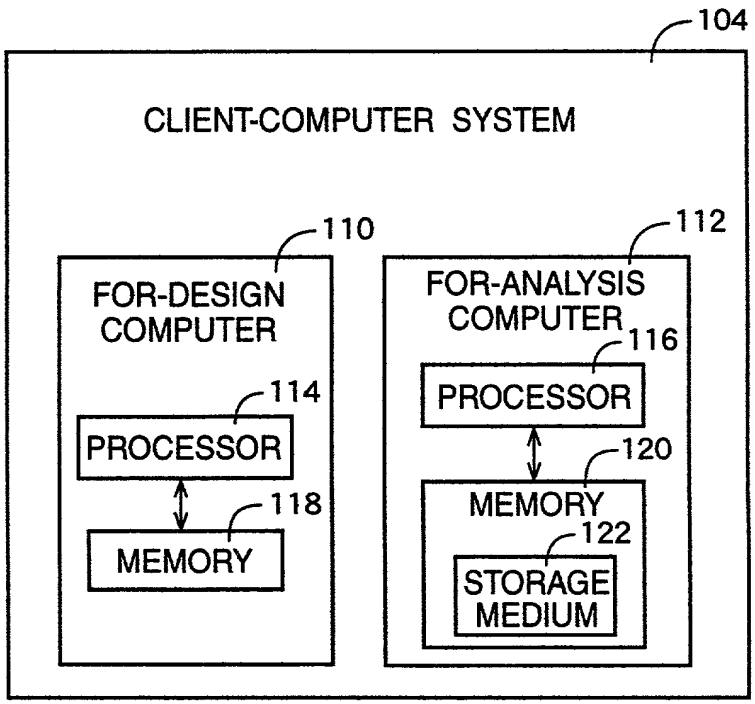

104
CLIENT-COMPUTER SYSTEM
110
FOR-DESIGN COMPUTER
114
PROCESSOR
118
MEMORY
112
FOR-ANALYSIS COMPUTER
116
PROCESSOR
120
MEMORY
122
STORAGE MEDIUM

FIG.16

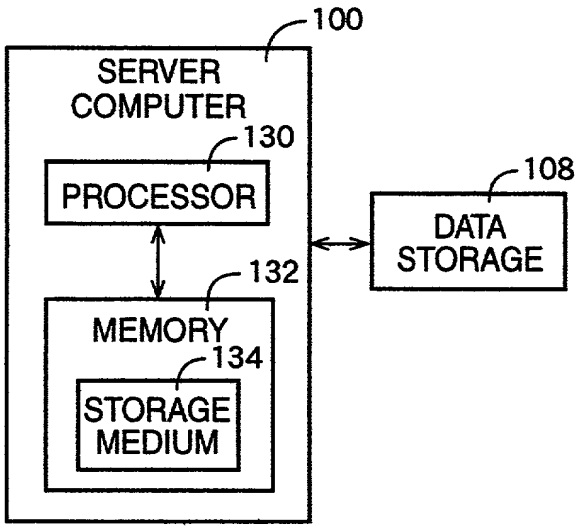

100
SERVER COMPUTER
130
PROCESSOR
108
DATA STORAGE
132
MEMORY
134
STORAGE MEDIUM

FIG.17

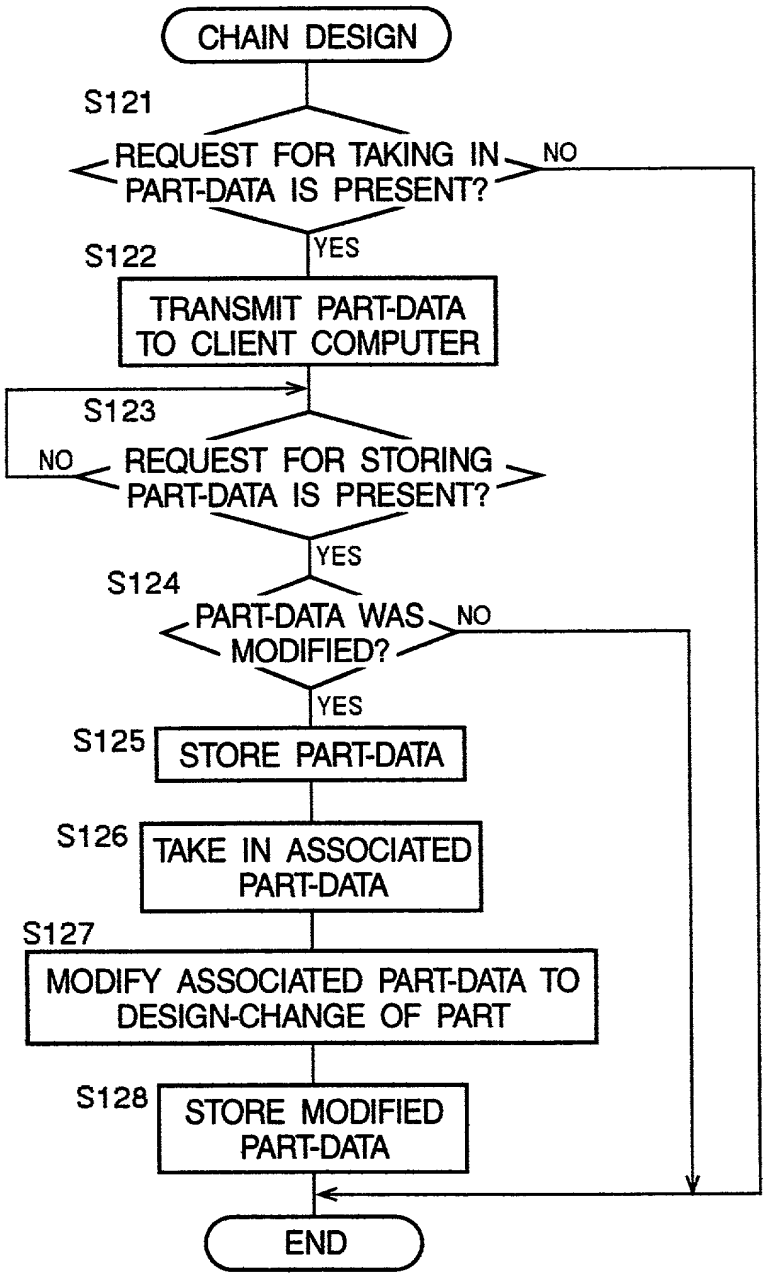

CHAIN DESIGN
S121
REQUEST FOR TAKING IN PART-DATA IS PRESENT?
NO
YES
S122
TRANSMIT PART-DATA TO CLIENT COMPUTER
S123
NO
REQUEST FOR STORING PART-DATA IS PRESENT?
YES
S124
PART-DATA WAS MODIFIED?
NO
YES
S125
STORE PART-DATA
S126
TAKE IN ASSOCIATED PART-DATA
S127
MODIFY ASSOCIATED PART-DATA TO DESIGN-CHANGE OF PART
S128
STORE MODIFIED PART-DATA
END

FIG.18

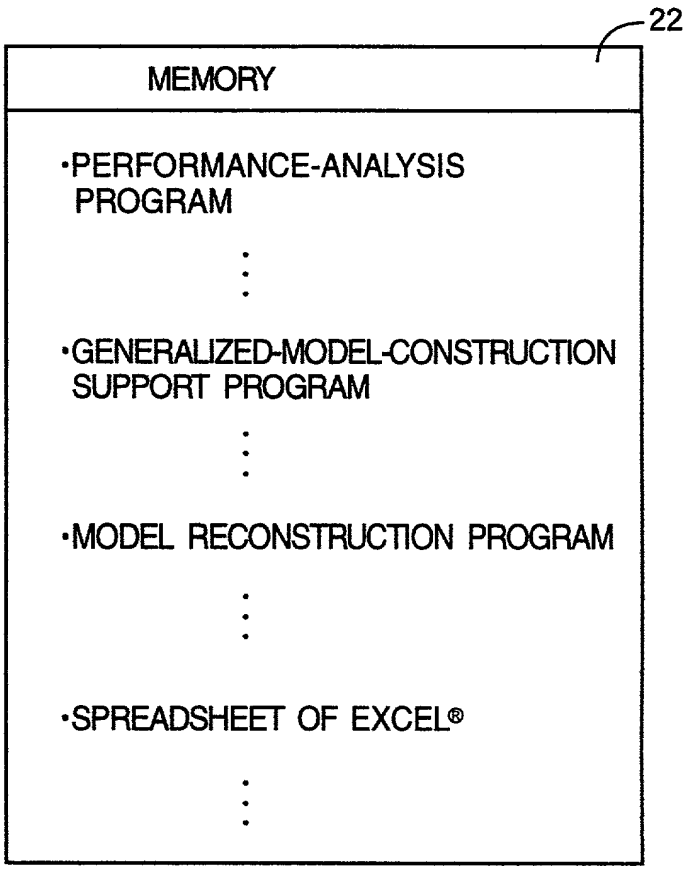

22
MEMORY
•PERFORMANCE-ANALYSIS PROGRAM
•GENERALIZED-MODEL-CONSTRUCTION SUPPORT PROGRAM
•MODEL RECONSTRUCTION PROGRAM
•SPREADSHEET OF EXCEL®

FIG.19

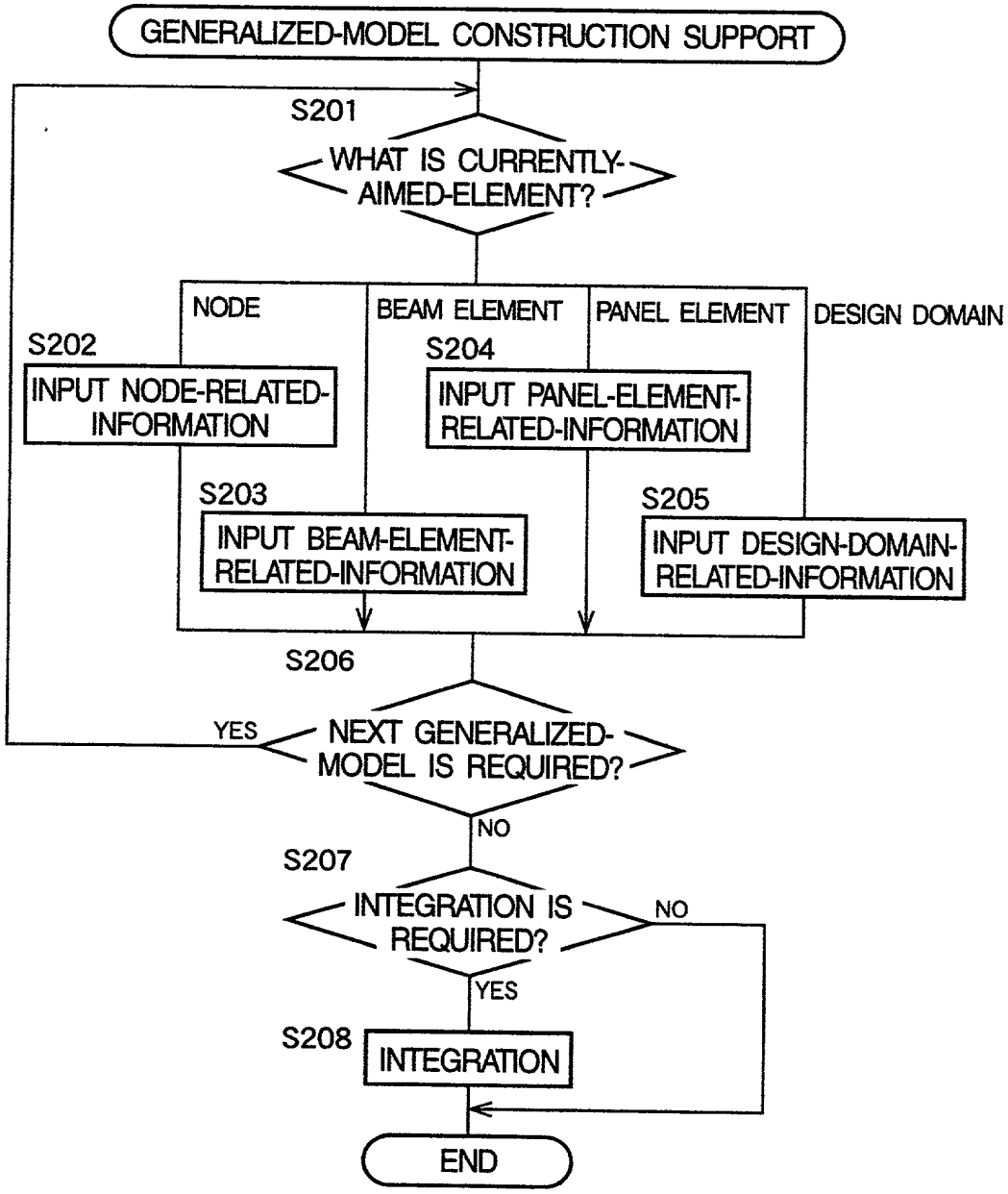

GENERALIZED-MODEL CONSTRUCTION SUPPORT
S201
WHAT IS CURRENTLY-AIMED-ELEMENT?
NODE
BEAM ELEMENT
PANEL ELEMENT
DESIGN DOMAIN
S202
INPUT NODE-RELATED-INFORMATION
S204
INPUT PANEL-ELEMENT-RELATED-INFORMATION
S203
INPUT BEAM-ELEMENT-RELATED-INFORMATION
S205
INPUT DESIGN-DOMAIN-RELATED-INFORMATION
S206
YES
NEXT GENERALIZED-MODEL IS REQUIRED?
NO
S207
INTEGRATION IS REQUIRED?
NO
YES
S208
INTEGRATION
END

FIG.20

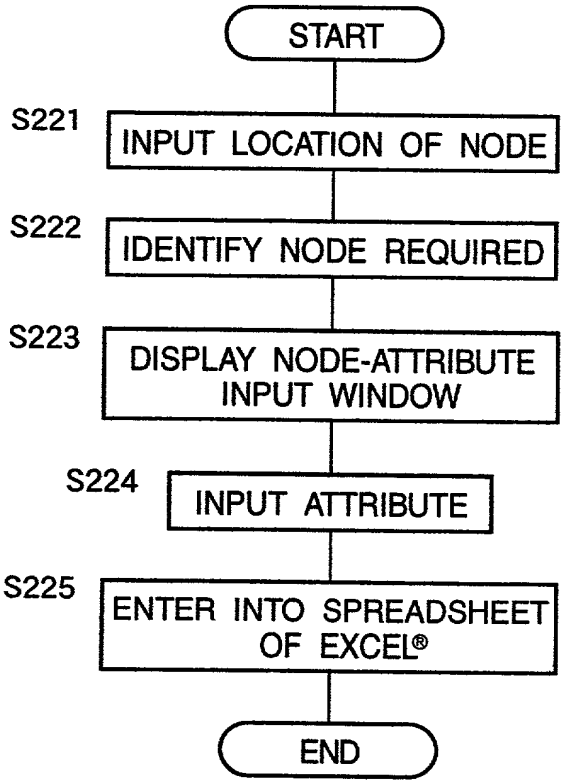

START
S221
INPUT LOCATION OF NODE
S222
IDENTIFY NODE REQUIRED
S223
DISPLAY NODE-ATTRIBUTE INPUT WINDOW
S224
INPUT ATTRIBUTE
S225
ENTER INTO SPREADSHEET OF EXCEL®
END

FIG.21

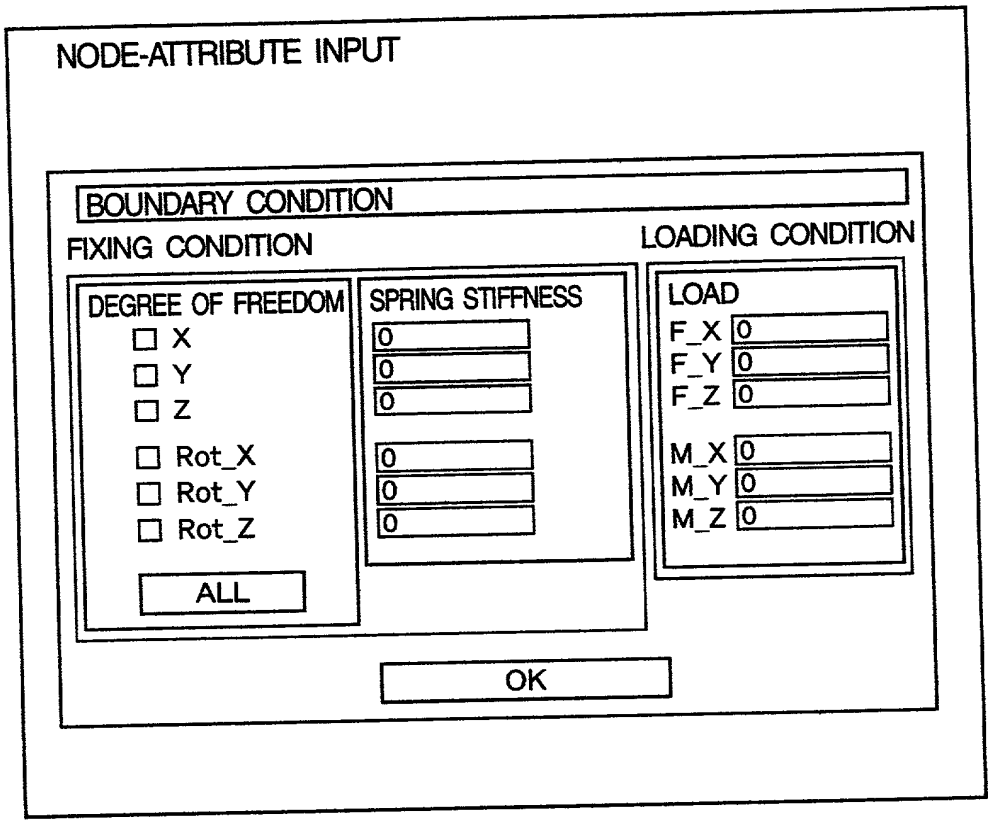

NODE-ATTRIBUTE INPUT
BOUNDARY CONDITION
FIXING CONDITION
LOADING CONDITION
DEGREE OF FREEDOM
X
Y
Z
Rot_X
Rot_Y
Rot_Z
ALL
SPRING STIFFNESS
0
0
0
0
0
0
LOAD
F_X 0
F_Y 0
F_Z 0
M_X 0
M_Y 0
M_Z 0
OK

FIG.22

NUMBER OF NODES	NUMBER OF ELEMENTS
8	10

LOADING : L LOAD VALUE(E.G.;L10)
CONSTRAINT : IF CONSTRAINED(=1)
BY-BUSHING CONSTRAINT: B SPRING CONSTANT(E.G.;B10)

NODE NUMBER	X-COORDINATE [mm]	Y-COORDINATE [mm]	Z-COORDINATE [mm]	X-DIRECTION	Y-DIRECTION	Z-DIRECTION	ABOUT X-AXIS	ABOUT Y-AXIS	ABOUT Z-AXIS
1	0	0	0	1	1	1	1	1	1
2	1000	0	0						
3	3000	0	0						
4	4000	0	0			L-10000			
5	0	0	1000	1	1	1	1	1	1

FIG.23

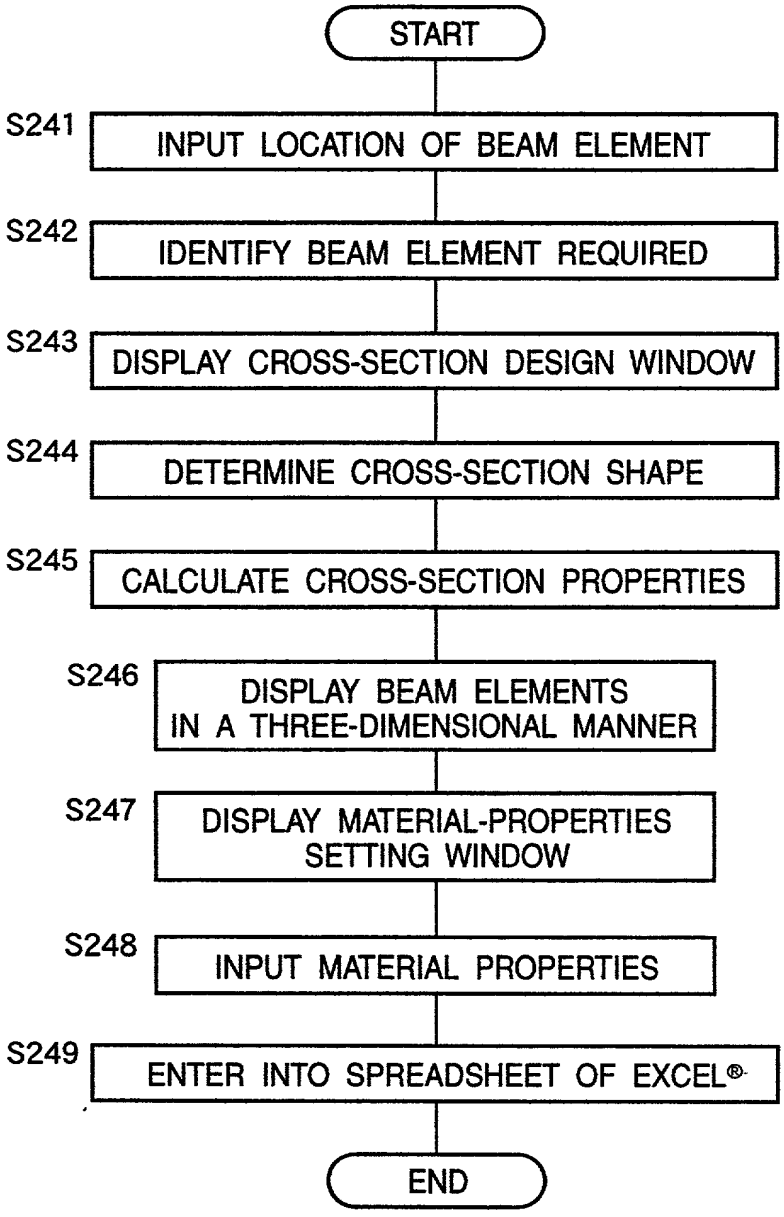

START
S241
INPUT LOCATION OF BEAM ELEMENT
S242
IDENTIFY BEAM ELEMENT REQUIRED
S243
DISPLAY CROSS-SECTION DESIGN WINDOW
S244
DETERMINE CROSS-SECTION SHAPE
S245
CALCULATE CROSS-SECTION PROPERTIES
S246
DISPLAY BEAM ELEMENTS IN A THREE-DIMENSIONAL MANNER
S247
DISPLAY MATERIAL-PROPERTIES SETTING WINDOW
S248
INPUT MATERIAL PROPERTIES
S249
ENTER INTO SPREADSHEET OF EXCEL®
END

FIG.24

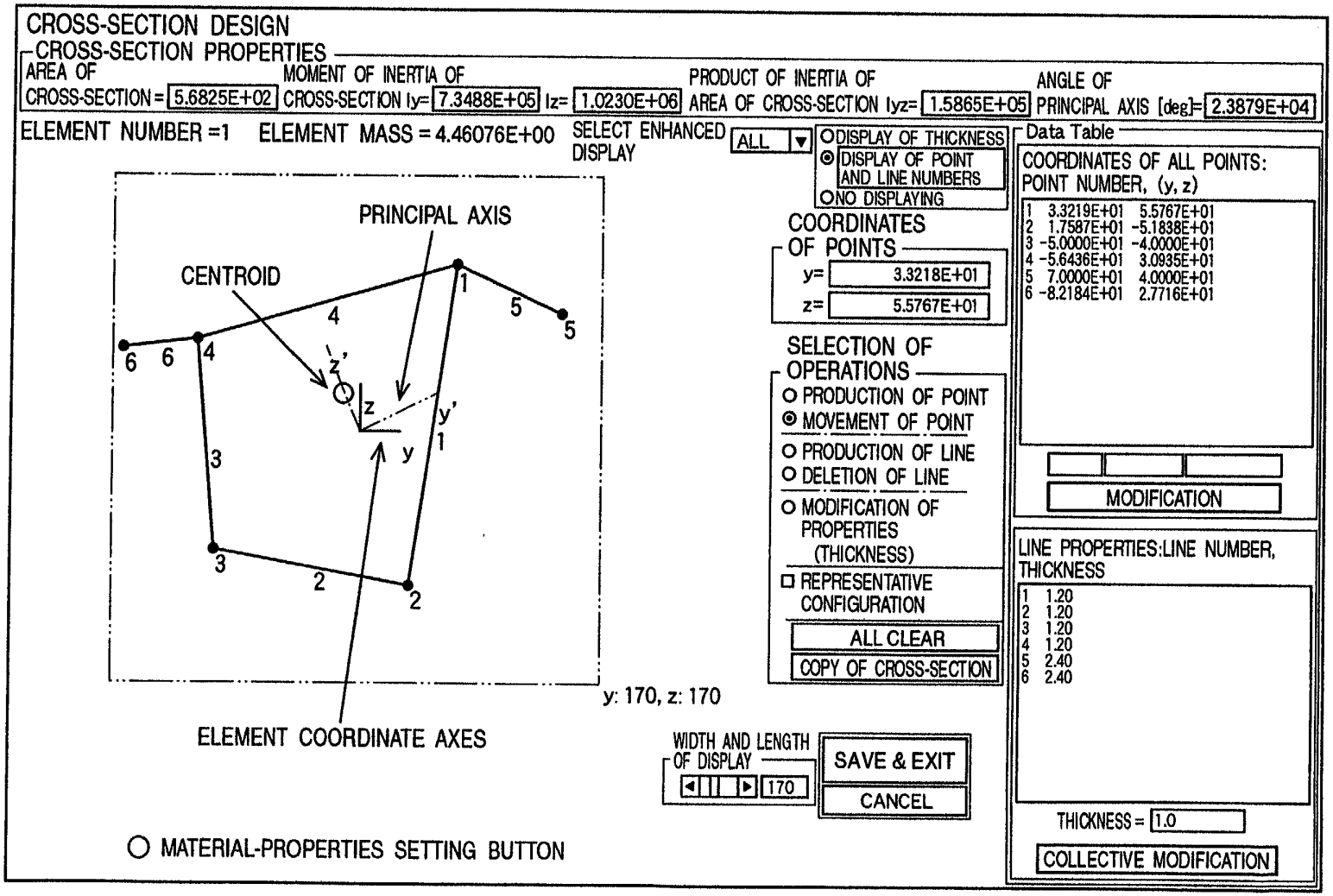


FIG.25

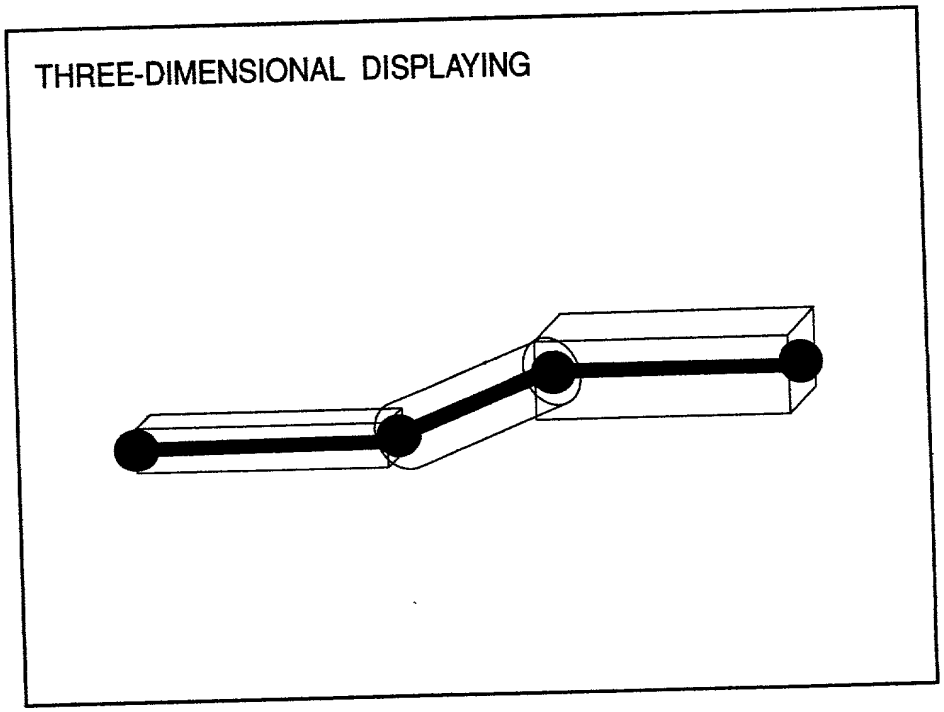


FIG.26

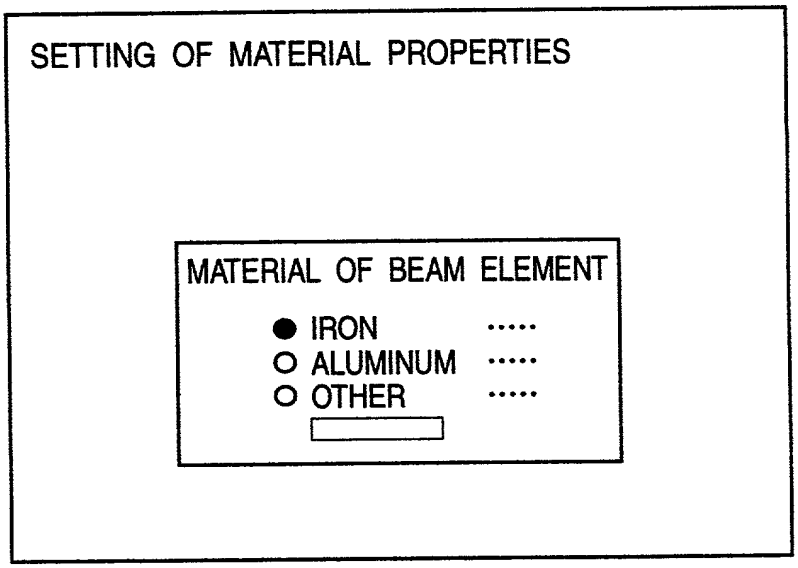

SETTING OF MATERIAL PROPERTIES
MATERIAL OF BEAM ELEMENT
IRON .....
ALUMINUM .....
OTHER .....

FIG.27

ELEMENT NUMBER	NODE1	NODE2	E[N/mm2]	ν	ρ [kg/mm3]	Bush side	ktx	kty	ktz
1	1	2	206000	0.3	7.85E-06				
2	2	3	206000	0.3	7.85E-06				
3	3	4	206000	0.3	7.85E-06				
4	5	6	206000	0.3	7.85E-06				
5	6	7	206000	0.3	7.85E-06				

FIG.28

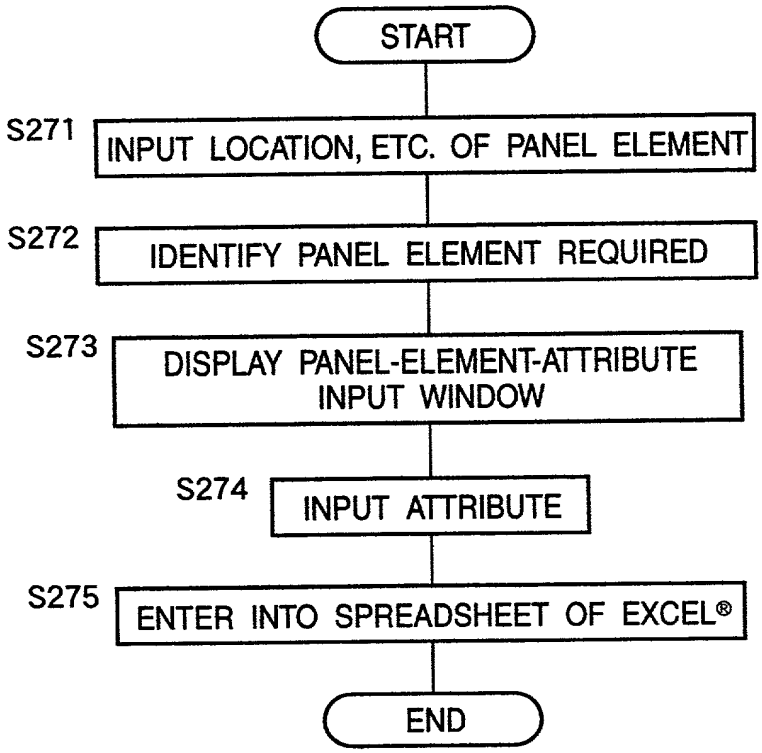

START
S271
INPUT LOCATION, ETC. OF PANEL ELEMENT
S272
IDENTIFY PANEL ELEMENT REQUIRED
S273
DISPLAY PANEL-ELEMENT-ATTRIBUTE INPUT WINDOW
S274
INPUT ATTRIBUTE
S275
ENTER INTO SPREADSHEET OF EXCEL®
END

FIG.29

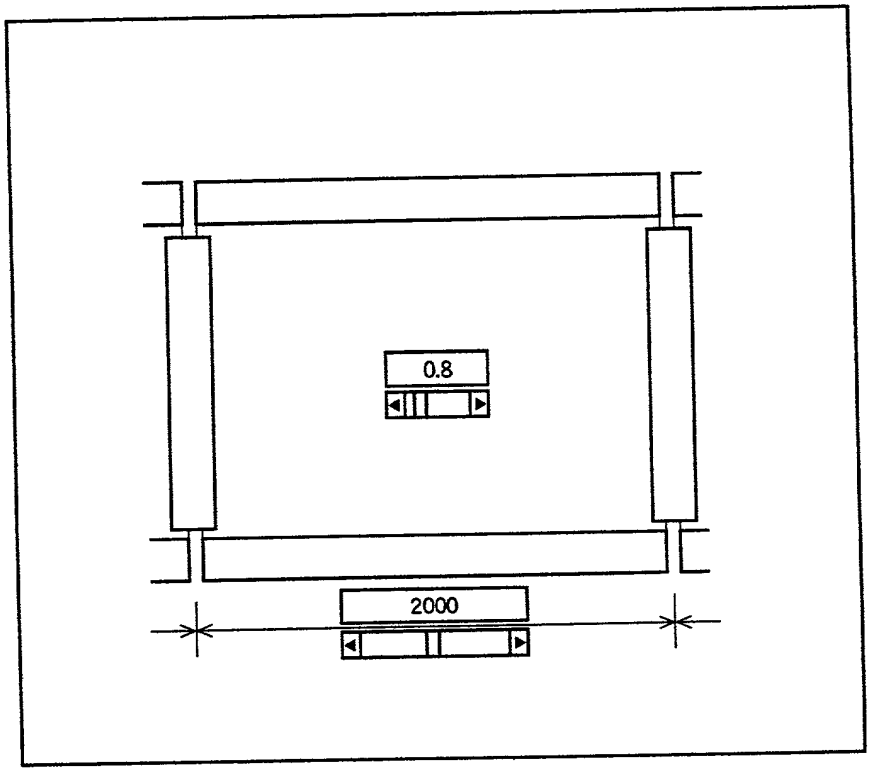


FIG.30

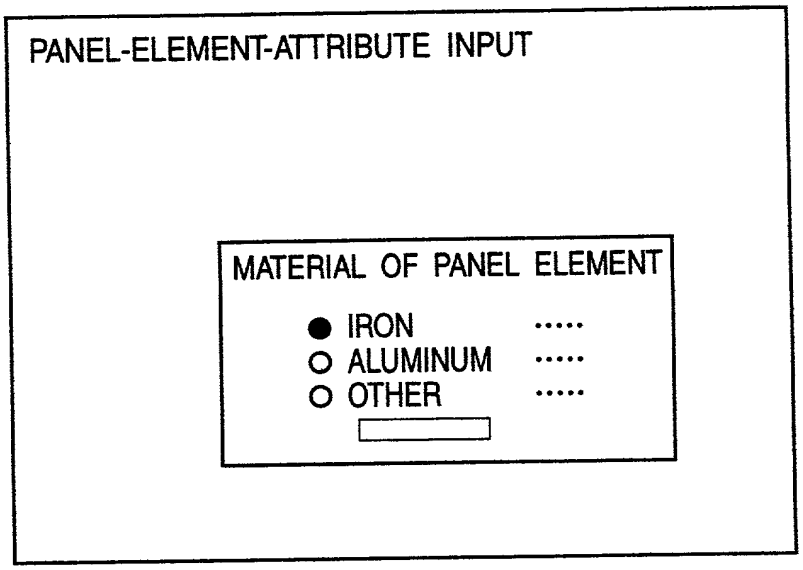
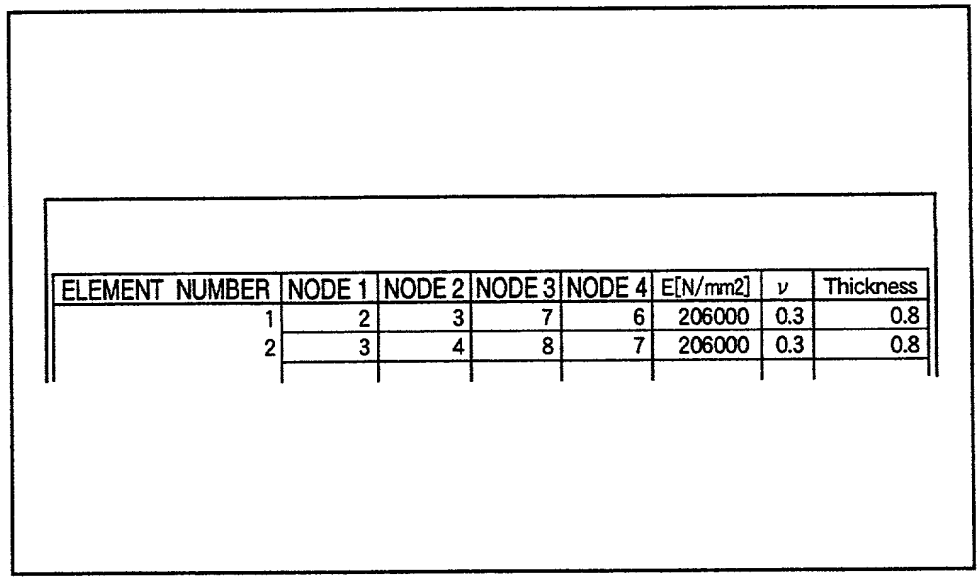

PANEL-ELEMENT-ATTRIBUTE INPUT
MATERIAL OF PANEL ELEMENT
IRON .....
ALUMINUM .....
OTHER .....

FIG.31



ELEMENT NUMBER	NODE 1	NODE 2	NODE 3	NODE 4	E[N/mm2]	ν	Thickness
1	2	3	7	6	206000	0.3	0.8
2	3	4	8	7	206000	0.3	0.8

FIG.32

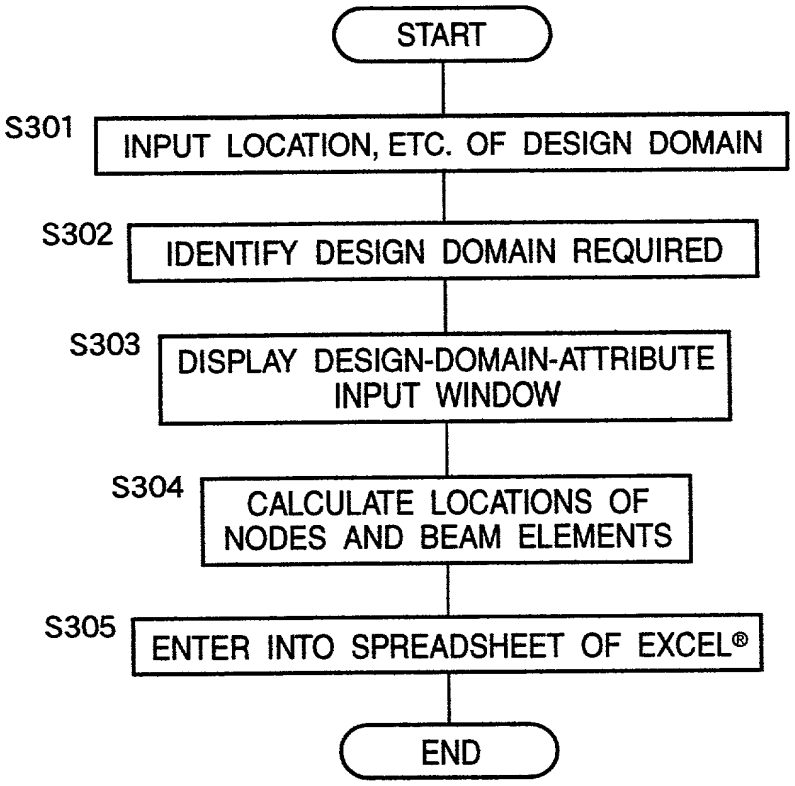

START
S301
INPUT LOCATION, ETC. OF DESIGN DOMAIN
S302
IDENTIFY DESIGN DOMAIN REQUIRED
S303
DISPLAY DESIGN-DOMAIN-ATTRIBUTE INPUT WINDOW
S304
CALCULATE LOCATIONS OF NODES AND BEAM ELEMENTS
S305
ENTER INTO SPREADSHEET OF EXCEL®
END

FIG.33

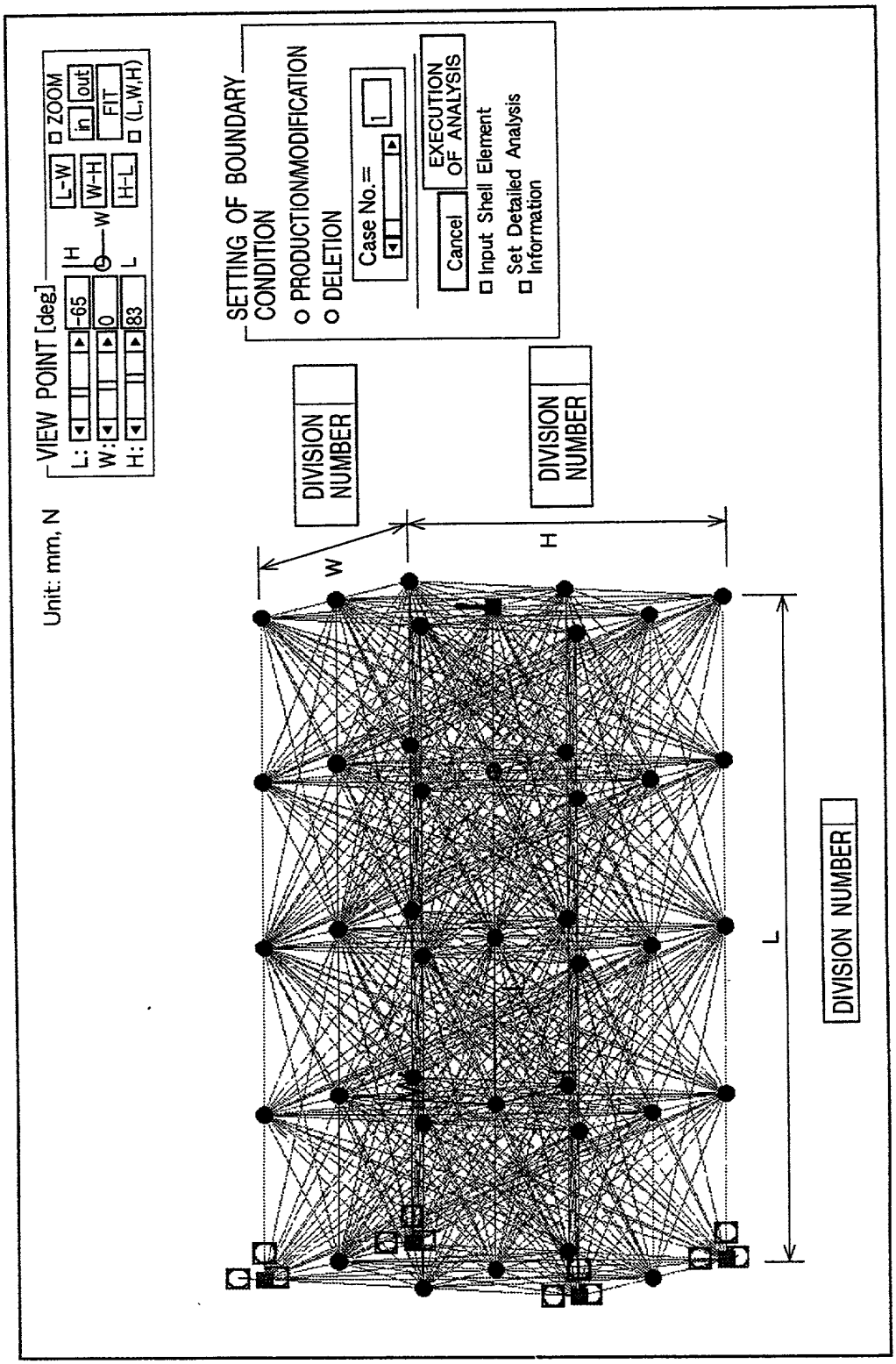

VIEW POINT [deg]
L:
W:
H:
-65
0
83
H
W
L
L-W
W-H
H-L
ZOOM
in
out
FIT
(L,W,H)
SETTING OF BOUNDARY CONDITION
PRODUCTION/MODIFICATION
DELETION
Case No.=
1
Cancel
EXECUTION OF ANALYSIS
Input Shell Element
Set Detailed Analysis Information
Unit: mm, N
DIVISION NUMBER
DIVISION NUMBER
DIVISION NUMBER
W
H
L

FIG.34

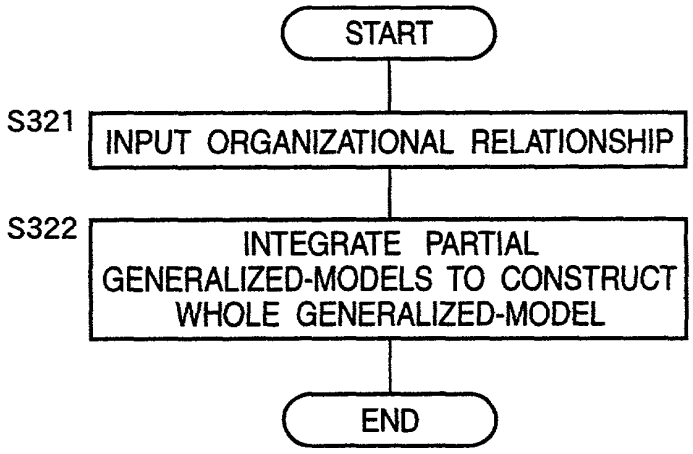

START
S321
INPUT ORGANIZATIONAL RELATIONSHIP
S322
INTEGRATE PARTIAL GENERALIZED-MODELS TO CONSTRUCT WHOLE GENERALIZED-MODEL
END

FIG.35

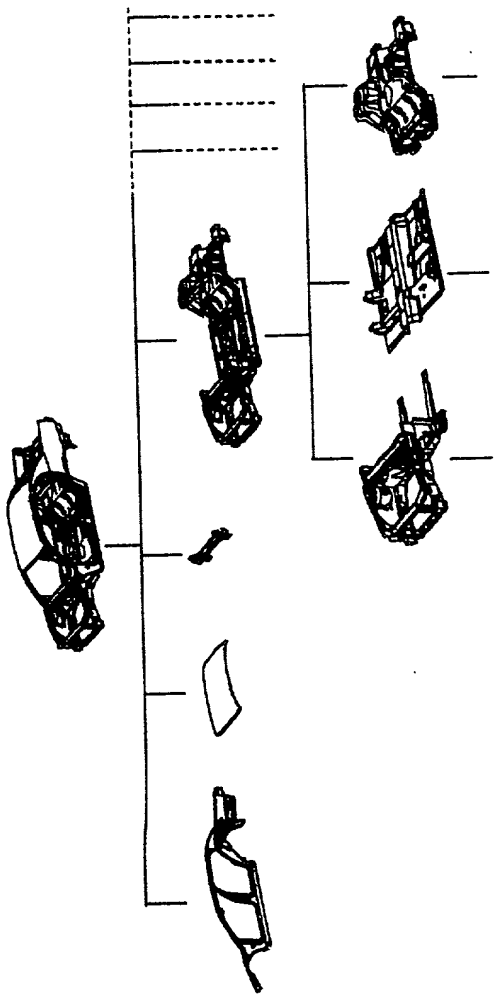


FIG. 36

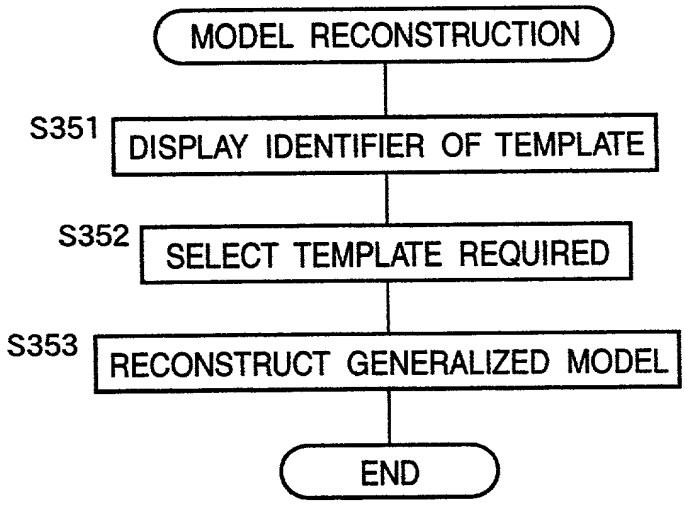

MODEL RECONSTRUCTION
S351
DISPLAY IDENTIFIER OF TEMPLATE
S352
SELECT TEMPLATE REQUIRED
S353
RECONSTRUCT GENERALIZED MODEL
END

FIG.37

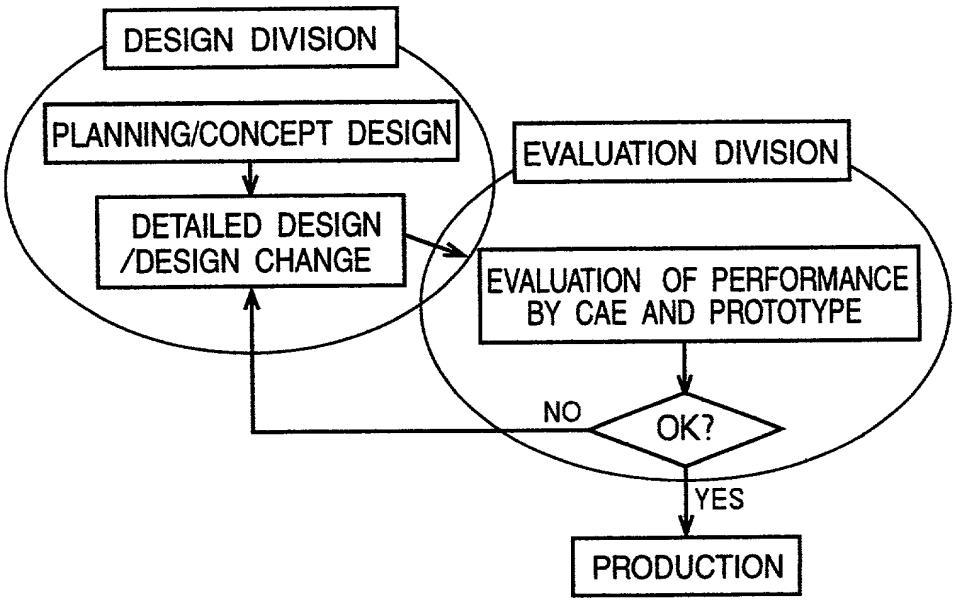

DESIGN DIVISION
PLANNING/CONCEPT DESIGN
DETAILED DESIGN /DESIGN CHANGE
EVALUATION DIVISION
EVALUATION OF PERFORMANCE BY CAE AND PROTOTYPE
NO
OK?
YES
PRODUCTION

FIG.38